

# NASA TECH BRIEF

## Lewis Research Center



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### Turbine Design Review Text

A three-volume publication covering the theoretical, design, and performance aspects of turbines has been written as an outgrowth of an in-house graduate course at the Lewis Research Center.

NASA has an interest in turbines for many applications. Airbreathing turbine engines provide jet and turbo-shaft propulsion, as well as auxiliary power for aircraft. Propellant-driven turbines provide rocket propulsion and auxiliary power for spacecraft. Closed-cycle turbine engines using inert gases, organic fluids, and metal fluids have been studied for providing long-duration electric power for spacecraft. Other applications of current interest for turbine engines include land-vehicle propulsion power for cars, trucks, buses, trains, etc., and ground-based electrical power.

The first of the three volumes covers thermodynamic and fluid-dynamic concepts, fundamental turbine concepts, and velocity diagram design. The second volume covers turbine blade aerodynamic design and turbine energy losses. The third volume addresses supersonic turbines, radial-inflow turbines, turbine cooling, and aerodynamic performance testing.

These publications can serve as a foundation for an introductory turbine course, a means for self-study, or a reference for selected topics.

#### Notes:

1. These texts have been published as the following reports:

NASA SP-290 (N72-26685), Turbine Design and Application, Volume I

NASA SP-290 (N74-33476), Turbine Design and Application, Volume II

NASA SP-290 (N75-24741), Turbine Design and Application, Volume III

Copies may be obtained at cost from:

Aerospace Research Applications Center  
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2. Specific technical questions may be directed to:

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